**SEMESTER – II**

| Course Code: BD2PS | Credits: 5 |
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## PEDAGOGY OF PHYSICAL SCIENCE – II

### COURSE OBJECTIVES

1. Understand the concept of Pedagogical Analysis
2. Explain the different teaching models
3. Discuss the activity - based and group-controlled instruction
4. Use various Resources in Resource - Based Learning
5. Analyse the Assessment in Pedagogy of Physical Science

### UNIT -1: PEDAGOGICAL ANALYSIS

Paradigm shift from pedagogy to Andragogy to Heutagogy – Concept and stages - Critical Pedagogy: Meaning, Foster independent thinking through critical pedagogy, Need and its implications in Teacher Education. Interaction Analysis: Flanders' Interaction analysis, Galloway's system of interaction analysis (Recording of Classroom Events, Construction and Interpretation of Interaction Matrix).

### UNIT-II: TEACHING MODELS

Bloom's Mastery Learning, Skinner's Operant Training, Bruner's Concept attainment, Ausubel's Advance Organizer, Glaser's Basic Teaching (Classroom Meeting), Byron Massials and Benjamin cox's social inquiry, Carl Roger's Non-directive and William Gordon's Synectics models.

### UNIT-III: ACTIVITY-BASED AND GROUP CONTROLLED INSTRUCTION

Activity Based Instruction: Concept, Classification - Role Play, Simulation, Incident method, Case Study method, Gaming and prioritisation exercises. Group Controlled Instruction: Concept, Definition and Importance of Group Controlled Instruction – Types of Group Controlled Instruction: Group Interactive sessions, Co-operative Learning methods, Group investigation, Group Projects.

### UNIT-IV: LEARNING RESOURCES

Need and significance of learning resources in Physical Science - Identifying and analyzing the learning resources in teaching-learning process of Physical Science - Physical Science Laboratory as a learning resource - Use of Science and Physical Science experiment kits in teaching - learning of Physical Science - Field visits and excursion as learning resource in Physical Science - ICT based

virtual experiments and simulations as learning resource in Physical Science - Role of the teacher - Limitations and hurdles in the use of various learning resources in Physical Science.

**UNIT – V: ASSESSMENT IN PEDAGOGY OF PHYSICAL SCIENCE**

Measurement and Evaluation - Differentiate between Assessment and Evaluation - Types of evaluation: Formative, Summative, Diagnostic Test – Standardization of Test, Principles and steps involved in the construction of achievement test – Blue Print and Question Pattern - Feedback Devices: Meaning, Types, Criteria, - Assessment of Portfolios, Reflective Journal, Field Engagement using Rubrics, Competency Based Evaluation.

**SUGGESTED ACTIVITIES**

1. Conduct a seminar in the class on teaching Models
2. Planning and conducting experiments for Science/ Physical Science
3. Designing laboratory experiences for using in teaching-learning process in classroom situation – two innovative activities and two improvised apparatus (artifacts).
4. Presentation (s) used for teaching-learning in the class
5. Critical review of a Textbook of Science/ Physical Science

**TEXT BOOKS**

1. Bawa, M.S. &Nagpal, B.M. (2010). *Developing teaching competencies*. New Delhi: Viva Book House.
2. Bhatia, K.K. (2001). *Foundations of teaching learning process*. Ludhiana: Tandon Publications.
3. Bloom, S. Benjamin, (1984). *Taxonomy of educational objectives*. Book I Cognitive domain. New York: Longmans, Green.
4. Joyce & Weil, (2004). *Models of teaching*. New Delhi: Prentice Hall of India.
5. Passi, B.K. (1991). *Models of teaching*. New Delhi: NCERT.

**SUPPLIMENTRY READINGS**

1. VenkatRao N &Ramuluch A (2016). *Pedagogy of Physical Science,*Hyderabad: Neelkamal Publisher
2. Panneerselvam A&Rajendiran K (2009). *Teaching of physical science*, Chennai: Shantha Publishers
3. Pramod Kumar N K. Ramaiah N K&Sreedharachayulu K (2016). *Pedagogy of Physical Sciences,* Hydrabad: Neelkamal Publishers
4. Arul Jothi D. L. Balaji& Vijay Kumar (2019).*Teaching of physical Science –I*New Delhi: Centrum Press Publishers
5. Kulshrestha S PGayaSingh (2019). *Pedagogy of School Subject Physical Science,*Meerut: R.LALL Book Publishers

6. AmalKantiSarkar (2020). *Pedagogy of Science Teaching Physical Science,*Kolkata: Rita Publications
7. Josh S R (1985). *Teaching of Science,*New Delhi: APH Publishing Corporation
8. *Pedagogy of Science PART-I,* National Council of Educational Research and Training
9. Amit Kumar (2002). *Teaching of Physical Sciences,*Bangaluru: Anmol Publications Pvt Ltd
10. Radha Mohan (2012). *Teaching of Physical Science,* Hydrabsd: Neelkamal Publisher

**E- RESOURCES**

1. http://teaching.uncc.edu/learning-resources/articles- books/best- practice/instructional-methods/150-teaching-methods
2. http://en.wikipedia.org/science_education
3. http://iat.com/learning-physical-science

**COURSE OUTCOMES**

After completion of this course, the student-teachers will be able to:

CO1: examine the importance of Critical Pedagogy.

CO2: appreciate the various models of teaching.

CO3: practise Activity Based Instruction in teaching Physical Science.

CO4: analyse and use the resources for teaching Physical Science.

CO5: handle various types of evaluation in teaching Physical Science.

**OUTCOME MAPPING**

| COURSE OUTCOMES | PROGRAMME SPECIFIC OUTCOMES | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 |
| CO1 | | | | | | * | | | | | | | | | | | | | | | | | | |
| CO2 | | | | | | * | | | | | | | | | | | | * | | * | | | | |
| CO3 | | * | | | | | | | | | | * | | | * | | | | | | | | | |
| CO4 | | | | | * | | | | | | | | | | | | * | | | | | | | |
| CO5 | | | | * | | | | | | | | | | | | | | * | | | | | | |